

RESULTS OF THE ALCOA FOUNDATION-SURINAME EXPEDITIONS. XII.  
FIRST RECORD OF THE GIANT FRUIT-EATING BAT, *ARTIBEUS AMPLUS*,  
(MAMMALIA: CHIROPTERA) FROM SURINAME  
WITH A REVIEW OF THE SPECIES

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ABSTRACT

Herein, we report new distributional records of *Artibeus amplus*, including its first documentation from Suriname, the southern-most records from Guyana, and the confirmation of its occurrence in the llanos savannahs of central Venezuela. This uncommon species is endemic to northern South America, and is one of the least known bats in the Neotropics. Additional ecological data are included in a review of information on natural history of this species. With the addition of *A. amplus* to the fauna, 104 species of bats are now known from Suriname.

KEY WORDS: *Artibeus amplus*, *Artibeus planirostris*, fruit-eating bats, Guyana, Suriname, Venezuela

INTRODUCTION

The giant fruit-eating bat (*Artibeus amplus*) is one of the most poorly known bats in the northern Neotropics. It is of particular interest, however, as one of the few species of bats endemic to northern South America, north of the Amazon River drainage basin. In his original description of the species, Handley (1987) reported 55 specimens from 10 localities in Venezuela and one locality in Colombia. Four of these were listed as "*Artibeus* sp. D." in an annotated checklist of mammals from the Smithsonian Venezuelan Project (Handley, 1976:33).

There have been few subsequent reports of this species in the scientific literature. The exceptions, however, include 38 individuals of *A. amplus* netted between 28 March and 5 August 1987 from Los Pijiguaos in a montane forested area within the llanos savannah of central Venezuela (Ochoa G. et al., 1988). Unfortunately, these authors did not specify the number of voucher specimens prepared and the museum of deposition in Venezuela. More recently, Lim and Wilson (1993) reported 10 specimens from six localities in Guyana and quantified morphometric differences between *A. amplus* and other large species of *Artibeus*. In a monograph on the mammals of Venezuela (Linares, 1998), 12 collection localities were mapped for *A. amplus*. There was, however, no specimens examined list or gazetteer to cross-reference these localities. In that monograph, there were three localities in addition to those mentioned in Handley (1987), including an additional record for the state of Bolívar and what appear to be the first records for the states of Áchira and

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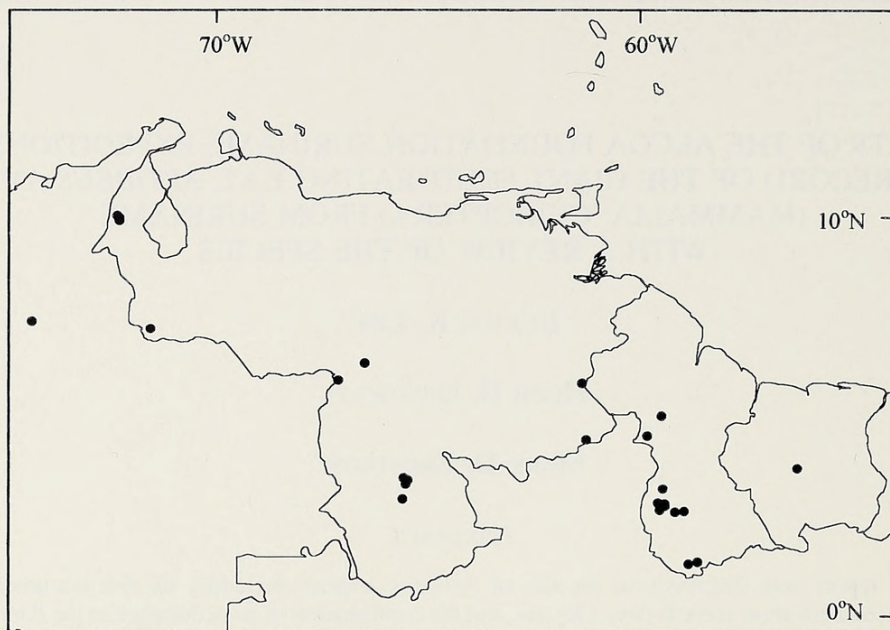


Fig. 1.—Map of northern South America with known locality records for *Artibeus amplus* from Colombia, Venezuela, Guyana, and Suriname. See “Specimens Examined” and Appendix 1 for locality details.

Portuguesa. We expand the known distributional range of *A. amplus* by documenting its first occurrence in Suriname, the southern-most record from the upper Essequibo River region of Guyana, and confirm its presence in the llanos of Venezuela. We also summarize the natural history of this species and provide information on its identification.

#### MATERIALS AND METHODS

Eleven cranial measurements were taken with digital callipers to the nearest 0.1 mm for the 10 new specimens of *A. amplus* reported in this study. The measurements were described in Lim and Wilson (1993) and include cranial length, palatal length, length of maxillary toothrow, breadth of zygomatic arch, mastoid breadth, width across upper molars, postorbital constriction, rostral length, interorbital width, width across upper canines, and coronoid height. External measurements were those recorded by the original collectors and included total length of body, length of hindfoot, length of ear, length of tragus, length of forearm, and mass (in g).

#### SPECIMENS EXAMINED

Locality information for the new specimen records, including country, region, locality, latitude, longitude, elevation (when known), and museum catalog number, is given below. Abbreviations are ROM, Royal Ontario Museum, and CM, Carnegie Museum of Natural History.

**GUYANA. Upper Takutu-Upper Essequibo:** Essequibo River, 7 km S Gunn's Strip, 240 m, 1°35'N, 58°38'W (ROM 106748, 106761). Kamao River, 50 km SWW Gunn's Strip, 1°32'N, 58°50'W (ROM 106679, 106697, 106722). Sand Creek Village, 32 to 48 km down river, approximately 3°00'N, 59°31'W (ROM 70125). Weri More, Quash Wau area, 19 km NE Dadanawa, 2°56'N, 59°29'W (ROM 67311).

**SURINAME. Saramacca:** Center of Arrowhead Basin, Augustus Creek, Tafelberg, 600 m, 3°54'N, 56°10'W (CM 76795).

**VENEZUELA. Amazonas:** Pozon, 50 km NE Puerto Ayacucho, 6°03'N, 67°25'W (ROM 107847, 107904).

#### RESULTS AND DISCUSSION

The first specimen of *Artibeus amplus* from Suriname was obtained by Stephen L. Williams on 3 November 1981. It was a pregnant adult female with an embryo having a crown-rump length of 16 mm. This record is the eastern-most currently known for the species (Fig. 1). The collecting site was in the center of a large basin on the top of Tafelberg



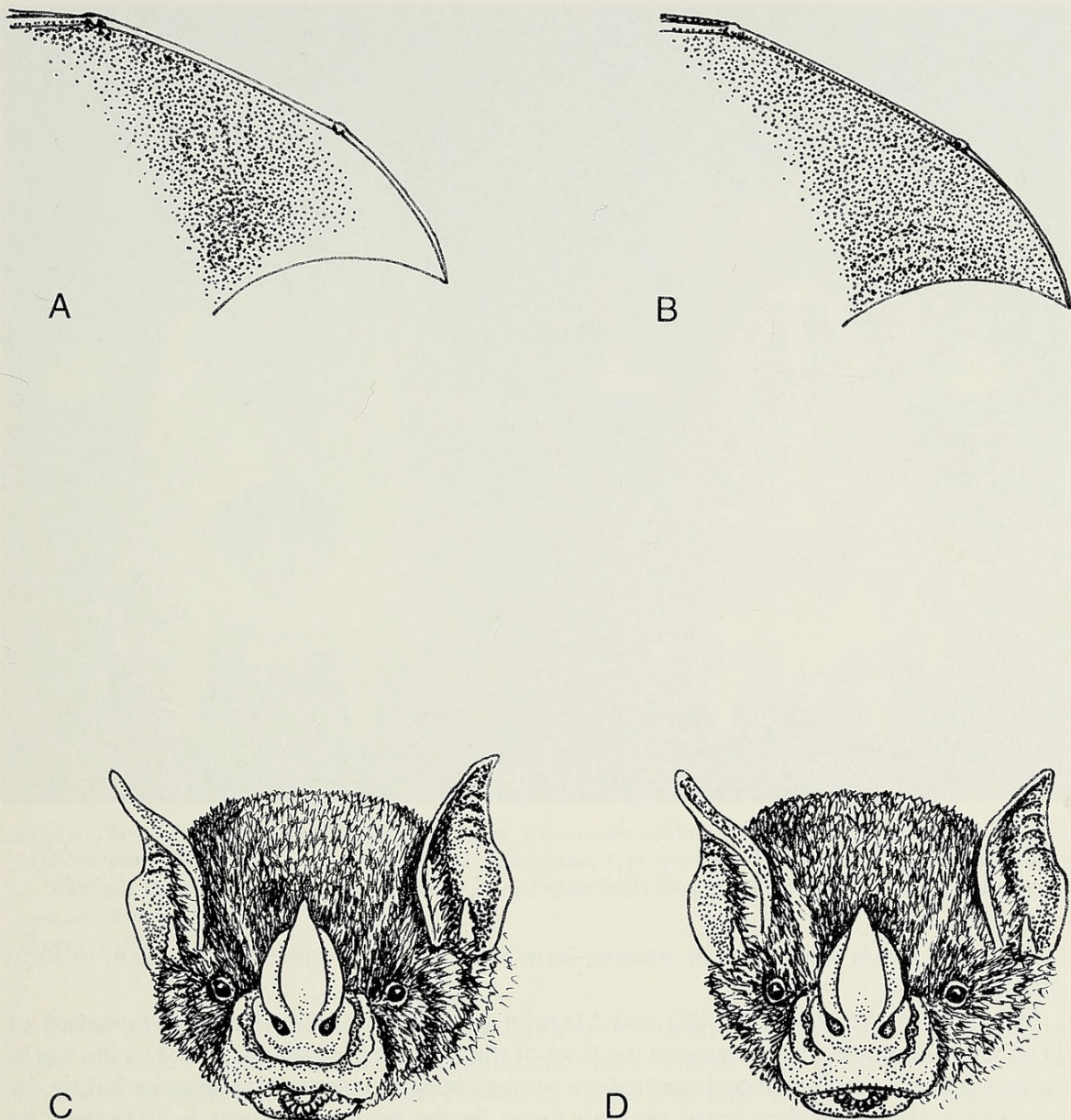


Fig. 2.—External differences between *Artibeus planirostris* and *A. amplus*. A. The white wing tip in *A. planirostris* contrasts with the brown color of the remainder of the wing; B. The wing tip in *A. amplus* is the same brown color as the remainder of the wing; C. The noseleaf in *A. planirostris* forms a complete margin of skin at the base, separating it from the upper lip; D. The base of the noseleaf in *A. amplus* merges continuously with the upper lip. Illustrations by Fiona A. Reid.

(600 m), which is the eastern-most tepui, or flat-topped, Cretaceous sandstone mountain overlaying the ancient pre-Cambrian Guayana Crystalline Shield (Maguire, 1970).

Tafelberg is almost completely rimmed by vertical cliffs that rise over 300 m above the surrounding lowland tropical forest. Only in one area of the northwestern rim is there a breakdown area, allowing overland access to the mountaintop. The mountain is a tilted triangular block of sandstone that is highest at the narrow southern end and lowest along the broad northern escarpment. The principal topographic feature of the mountain is the Arrowhead Basin, which also is triangular in shape, but its orientation is the reverse of that of the mountain. At its broad southern end there is an escarpment wall about 180 m in



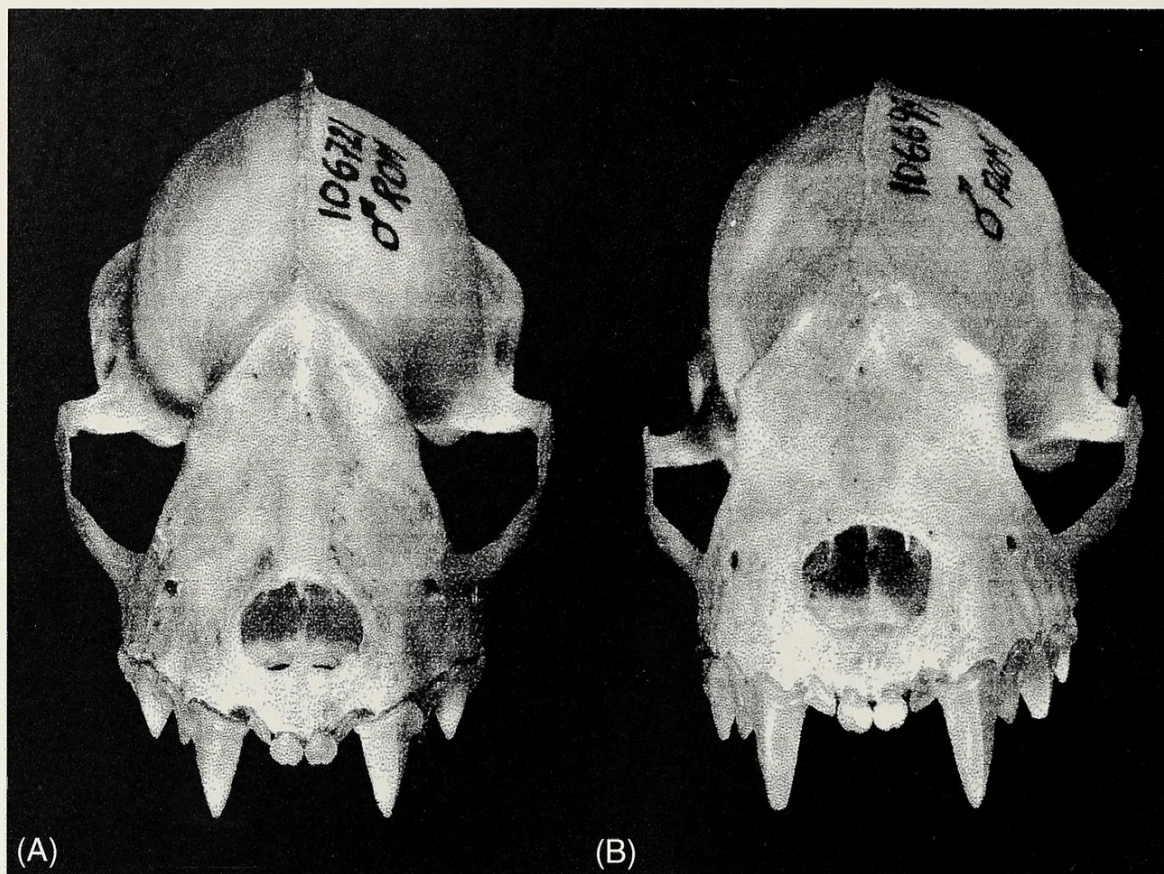


Fig. 3.—Cranial difference between *Artibeus planirostris* and *A. amplus*. A. The orbitorostral shield converges posteriorly towards the postorbital processes in *A. planirostris*; B. The lateral edges of the orbitorostral shield are nearly parallel posteriorly towards the postorbital processes in *A. amplus*. Photography by James Knowles.

height over which several small streams form waterfalls that collect in the basin to form Augustus Creek.

Maguire (1945a, 1945b, 1970) and Maguire et al. (1953) described the vegetation of Tafelberg as complex and related to the flora of the Guayana Highlands. Most of the top of the mountain is dominated by intermediate tropical bush; however, low areas including the Arrowhead Basin are dominated by high forest. In the basin, the forest is dominated by dakama (*Dimorphandra* sp.) with large buttressed roots and forming a dense canopy that allowed only filtered light to reach the ground.

On the evening that the specimen of *A. amplus* was captured, mist nets were placed across Augustus Creek in an area with a dakama forest canopy and over a seasonally dry pond in a forest opening. Over 90 linear meters of mist nets were used during the night. Only three other species were taken during the night, with each represented by a single specimen—*Pteronotus parnellii*, *Rhinophylla pumilio*, and a small species of *Eptesicus*. On the previous evening in this same area, two specimens of *Artibeus obscurus* were netted.

Specimens representing the southern-most records for the species were collected by Burton K. Lim, Eamon O'Toole, and Charles J. Robertson in the vicinity of the Wai-Wai village of Gunn's Strip in southern Guyana. The general habitat was tall evergreen non-flooded hill-land forest (Huber et al., 1995). Three were caught near a landing on the Kamo River about 2 km from the base of the Kamo Mountains. An adult male with testes measuring 3 by 2 mm was taken around 2130 h on 9 November 1996 in a mist net



Table 1.—*External measurements (mm) of 10 new specimens and previously reported samples of Artibeus amplus from northern South America.*

Catalog number and/or country	Total length	Hind foot length	Ear length	Tragus length	Forearm length	Mass (g)
CM 76795						
Suriname	96	21	26	—	69	60
ROM 67311						
Guyana	90	—	23	9	67	—
ROM 70125						
Guyana	86	—	25	9	71	—
ROM 106679						
Guyana	91	20	22	7	71	50
ROM 106697						
Guyana	93	19	23	8	65	47
ROM 106722						
Guyana	99	20	21	7	72	56
ROM 106748						
Guyana	92	20	22	7	68	46
ROM 106761						
Guyana	93	19	23	7	68	52
ROM 107847						
Amazonas, Venezuela	97	20	23	8	72	57
ROM 107904						
Amazonas, Venezuela	94	19	23	8	68	58
Colombia, Guyana, and Venezuela <sup>1</sup>	—	—	—	—	69.5 (64.9–73.4)	—
Zulia, Venezuela, and Colombia <sup>2</sup>	100.4 (93–104)	18.4 (17–19)	23.7 (22–26)	—	70.8 (68.6–75.3)	—
T. F. Amazonas and Bolivar, Venezuela <sup>2</sup>	89.9 (80–100)	18.3 (17–20)	23.0 (18–26)	—	69.1 (65.0–73.2)	—

<sup>1</sup> Lim and Wilson, 1993.

<sup>2</sup> Handley, 1987.

set across a newly cut trail in the forest understory (<3 m above the ground) within 200 m of the landing. A non-reproductive adult female was captured early in the morning on 14 November 1996 in a mist net placed further along the trail near the base of the mountain. An adult male, with testes measuring 9 by 5 mm, was obtained at approximately 2030 h on 11 November 1996 in a net set along a tree fall into the Kamoia River. Two additional specimens were collected near a landing on the Essequibo River at a point 7 km south of Gunn’s Strip (240 m elevation). A non-pregnant adult female was caught around 2030 h on 16 November 1996 and an adult male with testes measuring 10 by 7 mm was caught in the early morning on 20 November 1996. Both were captured in the same mist net placed across a newly cut forest trail near a stream crossing.

Two additional specimens recently were discovered in the Guyana collections amassed from 1961 to 1975 by Randolph L. Peterson at the Royal Ontario Museum (ROM), and not reported in Lim and Wilson (1993). Both were collected by Jerome Marques in the southern Rupununi region. An adult female was obtained between 20 October and 15 November 1972 in forest edge at the foot of the Kanuku Mountains. An adult male was netted in primary rainforest at Weru More in 1973 sometime prior to its deposition at the ROM in November of that year.

Two specimens were collected in the llanos region of central Venezuela near the Orinoco River and the Colombian border by Burton K. Lim, Thomas E. Lee, Jr., and John



Table 2.—Cranial measurements (mm) of 10 new specimens and previously reported samples of *Artibeus amplus* from northern South America.

Catalog number and/or country	Cranial length	Palatal length	Maxillary tooththrow length	Zygomatic breadth	Mastoid breadth	Breadth across upper molars	Postorbital constriction	Rostral length	Interorbital width	Width across upper canines	Coronoid height
CM 76795											
Suriname	31.2	12.2	11.1	18.2	15.5	13.5	7.9	14.6	9.0	8.4	7.7
ROM 67311											
Guyana	30.2	12.0	10.7	18.5	15.9	13.4	7.5	13.4	9.1	8.5	7.7
ROM 70125											
Guyana	31.3	12.4	10.8	18.6	16.6	13.2	7.7	14.4	9.5	8.7	8.4
ROM 106679											
Guyana	31.5	12.4	11.0	18.3	16.4	12.9	7.7	14.6	9.1	8.6	8.5
ROM 106697											
Guyana	30.9	12.5	11.0	17.7	15.8	13.3	7.9	14.2	9.4	8.9	8.2
ROM 106722											
Guyana	31.1	12.0	10.9	18.2	16.3	13.1	7.7	14.3	9.2	8.6	8.6
ROM 106748											
Guyana	30.7	12.2	10.8	17.3	16.1	12.6	7.8	14.0	8.5	8.2	8.2
ROM 106761											
Guyana	31.3	12.5	11.5	18.5	15.6	13.7	8.3	14.1	9.5	9.1	8.8
ROM 107847											
Amazonas, Venezuela	31.4	12.6	10.8	18.8	15.9	13.4	7.7	14.8	9.2	8.8	8.8
ROM 107904											
Amazonas, Venezuela	30.7	12.9	10.9	17.8	16.2	13.2	7.9	14.2	9.5	8.8	8.5
Colombia, Guyana, and Venezuela <sup>1</sup>	31.6 (30.5–33.2)	12.6 (11.8–13.4)	11.3 (10.8–11.9)	18.4 (17.9–19.1)	16.2 (15.4–17.1)	13.4 (12.9–13.9)	7.9 (7.4–8.4)	14.6 (13.6–15.8)	9.3 (8.4–10.2)	8.9 (8.4–9.6)	8.5 (7.7–9.0)
Zulia, Venezuela, and Colombia <sup>2</sup>	31.4 (31.0–31.9)	—	11.2 (11.1–11.5)	18.6 (18.1–18.8)	—	13.2 (12.7–13.5)	7.9 (7.6–8.3)	—	—	8.4 (8.2–8.8)	—
T. F. Amazonas and Boilvar, Venezuela <sup>2</sup>	31.2 (30.3–32.8)	—	11.2 (10.7–11.8)	18.4 (17.4–19.1)	—	13.3 (12.8–13.9)	7.8 (7.3–8.4)	—	—	8.6 (8.3–8.9)	—

<sup>1</sup> Lim and Wilson, 1993.<sup>2</sup> Handley, 1987.



D. Hanson. The general habitat was savannah with granite outcrops, forested hills, gallery forest, and other scattered patches of forest (bush islands). An adult non-reproductive female was taken on 21 July 1997 in a mist net placed in the forest near an intermittent creek at the base of a hill. An adult male with testes measuring 5 by 3 mm was caught in a mist net set across a dirt road passing through a stand of trees on 25 July 1997.

Although not widely distributed or relatively abundant, the ecological range of *A. amplus* is quite varied. Originally, it seemed to be closely associated with forested montane habitats. Only four specimens from two localities (Nulita and Tamatama) in the type description were lowland rainforest sites (Handley, 1987). The species subsequently was caught in the llanos savannah of Venezuela but still in close association with montane forest (Ochoa G. et al., 1988). However, in the first report of *A. amplus* from Guyana, the species was found in more typical dry savannah habitats at Dadanawa and Shea Village (Lim and Wilson, 1993). In this study, we also caught this bat during the wet season from gallery forest and bush islands in the llanos savannah of Venezuela. *Artibeus amplus* now has been taken in montane forest (1200 m), lowland forest (24 m), and savannah, with gallery forest or bush islands. The only known roosts for *A. amplus* are caves (Handley, 1987), but it probably also roosts in trees like other larger species of *Artibeus* (Emmons, 1997).

As outlined by Handley (1987), there are several external and cranial characters that distinguish *A. amplus* from the similar-sized *A. planirostris*. The tips of the wings of *A. amplus* are brown, and not white as seen in *A. planirostris*; and the noseleaf in *A. amplus* does not form a complete margin of skin at the base as does *A. planirostris*, but instead merges continuously with the upper lip (Fig. 2). In addition, the orbitorostral region of the skull in *A. amplus* is more robust with the lateral edges nearly parallel from the rostrum posteriorly towards the postorbital processes, as opposed to converging (Fig. 3). The skull is also proportionally longer and narrower (see Lim and Wilson, 1993).

The external and cranial measurements of the 10 new specimens from six localities are presented in Tables 1 and 2. The new specimens compare favorably in their measurements with those reported in Handley (1987) and Lim and Wilson (1993). The specimen from Suriname, however, had a relatively long hind foot and the highest recorded mass, although it was a pregnant female. One noteworthy observation about the mensural data for *A. amplus* is their relative uniformity across a broad geographic range from Colombia to Suriname in northern South America.

*Artibeus amplus* is now known by approximately 116 specimens from 27 localities in northern Colombia, Venezuela, Guyana, and central Suriname (Fig. 1). This distribution is unique in that it includes the Guianan subregion of Amazonas, eastern slopes of the northern Andes, and North Coast faunal provinces for bats (Koopman, 1976, 1982). The only other species of bat that has a similar distributional range is the even more enigmatic *Micronycteris homezi* (see Simmons and Voss, 1998; Lim and Engstrom, 2001). The distribution and abundance of these two previously unrecognized cryptic species may be underestimated in museum collections, or have gone undetected in trap-and-release ecological studies. Based on our current knowledge, however, each is restricted to non-Amazonian drainage to the north Atlantic coast of South America. The addition of *A. amplus* to the fauna of Suriname brings the known bat diversity in this country to 104 species (see Lim and Engstrom, 2001).

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#### Appendix 1—Additional Locality Records for *Artibeus amplus*.

Specimens from Colombia and Venezuela were records reported in Handley (1987), unless noted with \* (Ochoa G. et al., 1988), and those from Guyana were reported in Lim and Wilson (1993). Three Venezuelan localities plotted by Linares (1998) were not included because specimens, exact localities, and latitude and longitude were not presented.

**COLOMBIA. Antioquia:** La Tirana, 33 km SW Zaragoza, 520 m, 7°30'N, 74°52'W.

**GUYANA. Potaro-Siparuni:** Kaieteur Falls, 5°10'N, 59°29'W. Kato, Chiung River, 4°40'N, 59°49'W. **Upper Takutu-Upper Essequibo:** Dadanawa, 2°50'N, 59°31'W. Kuitaro River, 48 km E Dadanawa, approximately 2°50'N, 58°57'W. Nappi Creek, Kanuku Mountains, 40 km E Lethem, 3°23'N, 59°28'W. Shea Village, Kumakowri River, 2°49'N, 59°09'W.



**VENEZUELA.** **Amazonas:** Belén, Río Cunucunuma, 56 km NNW Esmeralda, 150 m, 3°39'N, 65°46'W. Cabecera del Caño Culebra, Cerro Duida, 40 km NNW Esmeralda, 1140–1200 m, 3°30'N, 65°43'W. Caño Culebra, Cerro Duida, 50 km NNW Esmeralda, 800 m, 3°37'N, 65°41'W. Tamatama, Río Orinoco, 2 km above Boca del Casiquiare, 135 m, 3°10'N, 65°49'W. **Apure:** Nulita, Selvas de San Camilo, 29 km SSW Santo Domingo, 24 m, 7°19'N, 71°57'W. **Bolívar:** 21 to 33 km NE Icabarú, 775–851 m, 4°35'N, 61°19'W. Km 125, 85 km SSE El Dorado, 826–1165 m, 5°59'N, 61°26'W. \*Serranía de Los Pijiguaos, approximately 140 km SW Caicara del Orinoco, approximately 6°29'N, 66°43'W. **Zulia:** Kasmera, 21 km SW Machiques, 270 m, 9°59'N, 72°43'W. 15 km W Machiques, approximately 10°05'N, 72°43'W. Novito, 19 km WSW Machiques, 1135 m, 10°02'N, 72°43'W.





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